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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/570,049	02/28/2006	Paul S. Zerwekh	OPT SYS-012	1871
29526 7590 02/11/2008 THE H.T. THAN LAW GROUP WATERFRONT CENTER SUITE 560 1010 WISCONSIN AVENUE NW WASHINGTON, DC 20007				
EXAMINER				
NOORI, MAX H				
ART UNIT		PAPER NUMBER		
2855				
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02/11/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/570,049

Applicant(s)

ZERWEKH ET AL.

Examiner

Max Noori

Art Unit

2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 16 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1.55-61.63-79 and 81-83 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1.55-61.63-79 and 81-83 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/808)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 55, 61, 63-69, 77, 79, and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wavering in view of Smith.

Regarding claim 1, 61, 67- 69, 81, Wavering et al., discloses an interferometer sensors with features of the claimed invention including provision of the plurality of sensing regions (see, for example, the abstract or col. 4. line 29-30), including pressure sensing region (see claim 14) and temperature sensing regions (claim 15). The pressure region comprises a cavity (element 30, col. 5, line 48), diaphragm (element 40), and plurality of reflecting surfaces (see, for example, col. 3, line 28, or figure 1A), for interferometer signal indicative of the distance changes between these surfaces. Wavering however, does not explicitly teaches the application of his device in a downhole environment. Even though, the nature of the specific application does not substantially contribute to the patentability of an apparatus claim, but, such application of interferometer sensor in downhole application is notoriously known. Smith, for example, is presented to show such application (see, for example, claim 23). Therefore, it would have been obvious for a skilled artisan at the time of the invention to modify Wavering et al., to use it in any desirable application, such as a downhole location in oil and gas.

Regarding claims 55, 77, and 79, Wavering discloses provision of directing light in to the cavity (col. 4, line 25).

Regarding claims 63-64, Wavering teaches plurality of reflected surfaces for various parameter sensing

Regarding claims 65-66, Wavering teaches plurality of reflected surfaces (col. 4, line 7).
Regarding claim 80, the sensor can be used for any reasonable application

3. Claims 56-60, 70-76 and 78 rejected under 35 U.S.C. 103(a) as being unpatentable over Wavering, in view of Smith, as applied to claim 1 above, and further in view of Lu, (US Patent No. 5,345,519).

Regarding claims 56-57, Even though it appears that Wavering/Smith optical sensor is a hollow tube, but he kept silent to elaborate on such arrangement. Use of hollow tube in optical sensor devices however, is notoriously known in the art, for example, Lu discloses a fiber optic strain sensor with a hollow tube. It would have been obvious there, for a skilled artisan at the time of the invention to assume that Wavering sensor is fundamentally is a hollow tube. Element 51 also serves as an end cap.

Regarding claim 58, Wavering/Smith fails to discuss any coating, however, the use of coating in optical sensor for more reflection is well known in the art. Lu shows such coating (for example, see element 55). Hence, it would have been obvious for a skilled artisan at the time of the invention to provide a coating on the reflecting surfaces of Wavering in order to allow for more complete reflection.

Regarding claim 59, coating is a modification.

Regarding claim 60, the provision of the mirror coating acts as a lens.

Regarding claims 70-71, the Lu teaches unitary constructions and similar materials.

Regarding claims 72, 78, Lu shows similar configuration for the tubes. Regarding claim 74, the sensing regions are in the tubes. Regarding claim 75, the tubes have hollow portions.

Regarding claims 73, and 76 since the use of various glass materials is known in fiber optical sensor, it would have been obvious for a skilled artisan at the time of the invention to modify Wavering/Smith/Lu to use any suitable glass or any suitable design in order to provide for more accurate result and less light distraction.

4. Claims 82-83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wavering in view of Smith as applied to claim 1 above, and further in view of Kluth et al., (US Patent No. 5,872,876).

The use of various coating materials for general protection is well known in fiber optical sensor. For example, Kluth, shows an optical sensor with carbon protecting coating (see, for example the abstract). It would have been obvious, therefore, for a skilled artisan at the time of the invention to modify Wavering/Smith to use any protective coating for the desired intention against environmental effects.

Response to Amendment

5. Applicant's amendment and arguments filed 1/16/08 have been fully considered but they are moot in view of the new ground of rejection. The aspect of an intended use, in an apparatus claim, without any specific non-obvious structural limitation, fails to provide for a patentable feature. It is submitted that, even though the cited art does not recite the same specific

application, but it is obviously is capable of being applied in any related engineer environment. Moreover supporting art was presented to show the known use of optical sensor in downhole applications.

6. THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Max H. Noori whose telephone number is (571) 272-2185. The examiner can normally be reached on Tuesday-Friday from 8:00 AM to 6:00 P.M.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-2800. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. The central fax number is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Max Noori/
Primary Examiner, Art Unit 2855
Monday, February 11, 2008